

Final Report on State Energy Program (SEP) Special Project Multi-tiered Alternative Transportation Fuel Outreach Program October 1997 - June 2003

Submitted by the State of Hawaii Under USDOE Contract Number DE-FG51-97R020881

September, 2003

Multi-tiered Alternative Transportation Fuel Outreach Program – Grant No. DE-FG51-97R020881

Disclaimer

This report was prepared as an account of work sponsored by the United States Government under Grant Number DE-FG51-97R020881. Neither the United States nor the United States Department of Energy, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or services by trade name, mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Point of contact: Maria L. Tome

Alternate Energy Engineer Strategic Industries Division

Hawaii State Department of Business, Economic Development, and Tourism

P.O. Box 2359

Honolulu, HI 96804

Phone: (808) 587-3809 Fax: (808) 587-3820

E-mail: mtome@dbedt.hawaii.gov

Internet: www.hawaii.gov/dbedt/ert

Alternative

Fuel

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
BACKGROUND: HONOLULU CLEAN CITIES	2
GOALS AND OBJECTIVES OF PROJECT	2
Co-sponsorship and support of the Hawaii "Electron Marathon"	3
Drafting, publication and distribution of ATF/AFV activity books	3
Exhibits and displays for conferences, trade shows, seminars, and other public events	4
Participating in exhibitions, trade shows, conferences, and other events	5
PROJECT PARTICIPANTS	6
RESULTS	7
Introduced private fleets to propane fuel	7
Supported Electron Marathons	9
Created, printed and distributed the 32-page Hawaii's Fun-Fueled Activity Book	10
Produced displays that appeal to non-traditional stakeholder candidates	13
Participated in exhibitions, trade shows, conferences, seminars, parades, and other events	15
EXPENSES / COST SHARE	17
SUMMARY	18
Appendix	
Hours Contributed by Task	A-1
Cash Contributions from Partners by Task	A-2
Project Expenditures	4-3

EXECUTIVE SUMMARY

This is the final report on the State Energy Program (SEP) Special Project under the United States Department of Energy (USDOE) Contract Number DE-FG51-97R020881, entitled "Multi-tiered Alternative Transportation Fuel Outreach Program," which ran from October 1, 1997 through June 30, 2003.

The project involved outreach programs intended to recruit new, non-traditional stakeholders and to accelerate alternative fuel acceptance and use in municipal and private vehicle fleets in Hawaii.



In addition to using "traditional" displays and exhibits to reach "non-traditional" audiences (for example, at auto shows and school fairs), the project also developed an activity book for children and used attention-getting vehicles to reach a larger audience.

The project had four objectives:

- Joining other organizations in the sponsorship of Hawaii's Electron Marathon;
- 2. Publishing an alternative fuel activity book for elementary school students;
- Producing displays that appeal to non-traditional stakeholder candidates; and,
- 4. Participating in exhibitions, trade shows, conferences, seminars, parades, and other events



Multi-tiered Alternative Transportation Fuel Outreach Program - Grant No. DE-FG51-97R020881

BACKGROUND: HONOLULU CLEAN CITIES



The Honolulu Clean Cities coalition, the 38th Clean City designated by the USDOE, participates in numerous public awareness events, including conventions, outdoor fairs, indoor exhibits, and ride-and-drive opportunities; distributes

thousands of pamphlets, brochures, and fact sheets on alternative fuels; develops, prints, and distributes a multiple-page newsletter focusing on alternative fuels projects in Hawaii to a distribution list of hundreds of fleet managers, decisionmakers, and alternative fuels supporters; and continues to develop new partnerships and to add stakeholders to the

The state's economy relies heavily on tourism, which is largely dependent upon an attractive and appealing environment, including clean air and water. The state is also isolated from sources of fossil fuels, and the economy has been

coalition.



sluggish for the past several years. These facts underscore the importance of environmental responsibility, energy efficiency and independence, and economically viable alternatives.

Despite the potential of alternative fuels to provide benefits for the local environment, economy and lifestyle, however, there remains great reluctance on the part of the public and many fleet managers to utilize ATF.

Mandates alone may not prove effective in converting fleets to ATF use; voluntary compliance and voluntary ATF use have a much greater potential to be cost-effective for both the enforcing agency and covered (as well as non-covered) fleets. This project provided a multi-tiered approach to positively influence public perception and acceptance of ATF.

GOALS AND OBJECTIVES OF PROJECT

This project was intended to accelerate the understanding, use and general acceptance of alternative transportation fuels (ATF) by fleet managers and others affected by the alternative fuel transportation program of the Energy Policy Act of 1992, as well as by regulators, decision-makers, teachers, students, and the general public. The four main objectives were:

Co-sponsorship and support of the Hawaii "Electron Marathon"

The Hawaii Electron
Marathon has been held
annually since 1996. The
marathon, coordinated by
Hawaiian Electric Company
and sponsored by numerous
public and private-sector
partners, including the
Hawaii State Department of
Education, serves to
integrate math, science,



language arts, electronics, and automotive curricula with technical, "hands-on" skills as each team designs, builds and documents all aspects of an electric vehicle. Each team must also make a five (5) minute presentation as well as submit the vehicle for "pre-race" technical inspection and judging.

Vehicles are judged on appearance, aerodynamics, safety, and overall use of recycled materials. The final evaluation criterion is the vehicle's ability to maintain a steady state 25 MPH road speed and the total distance traveled in 60 minutes on a single charge.

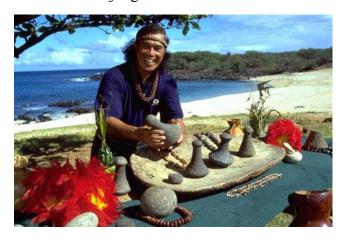
In addition to the applied learning aspect of the marathon, the overall goal of the marathon is to: increase students' and teachers' knowledge and understanding of electric vehicles; provide a wide variety of individuals and groups with the opportunity to become familiar and comfortable with electric vehicles; and foster teamwork, respect and an appreciation for planning, design and construction technologies.

Support of this "training ground" for future ATF/AFV engineers and entrepreneurs ensures its growth to accommodate the increasing interest in ATF and AFV, and reinforces the message to the general public that ATF and AFV are not a passing "fad" but are important to our future, and are here to stay.

Honolulu Clean Cities supported the Electron Marathon through providing funding for the event as well as providing staff support as race officials and judges.

Drafting, publication and distribution of ATF/AFV activity books

To foster acceptance and understanding of ATF within the community, awareness programs for non-traditional organizations are needed. These non-traditional organizations are potentially new stakeholders and their inclusion provides



additional /breadth and depth to the ATF/AFV message.

Educational institutions are the most prominent of potential, non-traditional stakeholders. ATF/AFV outreach programs for educational institutions provide teachers and students with information on actual solutions to many global problems. In addition, they raise awareness of ATF/AFV that are becoming more common place and will likely become an integral factor in their lives.

Also, since today's students are tomorrow's leaders, decision-makers, scholars and fleet operators, effective outreach programs at an early stage will ultimately improve the acceptance and use of ATF/AFV as the students enter the job market and assume key roles in vehicle, fuel, and policy areas.



The coalition's outreach program included the publication and distribution of an ATF/AFV activity book for elementary schools. The *Fun-Fueled Activity Book* includes a number of fun activities such as coloring, dot-to-dot drawings, word hunts, mazes, etc., that are ATF/AFV oriented; an appendix containing in-depth fact sheets on each of the alternative fuels; and contact information for local alternative fuel experts and national information resources, including U.S. Department of Energy websites and the alternative fuel information hotline.

Exhibits and displays for conferences, trade shows, seminars, and other public events

The coalition's awareness and information programs to date have resulted in several invitations to participate in exhibitions, fairs, and conferences.

Most of these events are geared towards children and other non-automotive oriented



individuals. Although these participants do not directly affect ATF/AFV decisions for vehicle fleets, they play a key role in influencing overall public acceptance of alternative fuels and desire for the benefits offered by alternative fuels, such as energy security, clean air, and jobs. However, much of the alternative fuel material that exists is geared towards fleet operators and is inappropriate or too technical for the general public.

The process of informing and educating the community on ATF/AFV issues begins with the creation of simple, non-technical graphic displays and promotional items. Graphic display items must convey the essential points of need for ATF/AFV without too much

extraneous detail. Promotional items such as pens, pencils, key rings, or area maps with ATF refueling stations provide for instant recognition of the coalition and reminders of the ATF/AFV message.

Multi-tiered Alternative Transportation Fuel Outreach Program - Grant No. DE-FG51-97R020881

Also essential to public awareness is providing a distinctive appearance for the alternative

fueled vehicles. Without eye-catching signage, many members of the public may come in contact with ATF/AFV daily and not realize it.

The coalition therefore developed AFV signage to more dynamically identify ATF use with attractive graphics and colors. In addition, the coalition supported a



stakeholder's plan to purchase a vehicle and equip it with appropriate graphics for use in parades, shows, exhibitions, conferences and seminars.

Participating in exhibitions, trade shows, conferences, and other events.



The "traditional" events in which alternative fuels are featured are those events which pertain to energy, transportation, or the environment. These audiences tend to have at least some background in technical and policy aspects of alternative fuels and vehicles, and have been exposed to the available fuels and vehicles to various degrees. It is important that these groups be kept informed of progress

in the area of alternative fuels and vehicles, and that they be given a chance to network with each other and experts in the field.

However, to build broader public acceptance and interest in the value and potential for alternative fuels, it is important that information on alternative fuels also be presented at "non-traditional" events. Examples of such events are school fairs, new product shows, in libraries and shopping centers, at truck races, in parades, etc.



One example of an event which reaches non-traditional audiences is the annual "Honolulu City Lights" Christmas Parade, which is well-attended (generally between 30,000 and 50,000 residents and tourists) as well as telecast live. Following the

parade, interested members of the public (see photo at right) come to get a

closer look at the vehicles and are given an opportunity to ask questions. This is an excellent opportunity to introduce alternative fuels and alternative fueled vehicles to members of the public who would not otherwise be exposed to the concept.



PROJECT PARTICIPANTS



Clean Cities Stakeholders, listed below, were active participants in the project:

- American Lung Association of Hawaii
- American Public Works Association Hawaii
- Ameron HC&D
- Board of Water Supply (Honolulu)
- Brewer Environmental Industries
- City & County of Honolulu
- Commercial Training Consultants
- Cummins Hawaii Diesel Power
- Del Monte Fresh Produce
- EA Engineering, Science, and Technology
- Electric Vehicle Association of Hawaii
- Engineers Surveyors Hawaii, Inc.
- Enova Systems (formerly U.S. Electricar)
- Fleet Street Graphics
- The Gas Company
- GEM of Hawaii
- HT&T Truck Center
- Hawaii Detroit Diesel Allison
- Hawaii Electric Vehicle Demonstration Project
- Hawaii Natural Energy Institute
- Hawaii Transportation Association
- Hawaiian Electric Company, Inc.
- Oahu Fleet Safety Organization
- Pacific Biodiesel
- Pacific International Center for High Technology Research
- Pacific Machinery
- State of Hawaii Department of Business, Economic Development & Tourism
- Travel Plaza Transportation
- US Department of Energy (USDOE) Pacific Liaison
- US General Services Administration (USGSA), Fleet Management Branch
- US Navy, Public Works Center





RESULTS

The project met or exceeded all of its revised objectives. Partial results from the first task of the original scope are included below.

Introduced private fleets to propane fuel.

The original project scope included a task to identify private fleets for conversion to liquified petroleum gas (commonly referred to as "propane"), which was the only available alternative fuel at the time of the proposal. Fleet managers and other decision-makers within potential fleets were offered the opportunity to operate a propane truck for a specified period of time, and surveyed on their impressions. The original project proposed that the fleet managers then be encouraged to participate in the conversion of one of their own vehicles to operate on propane for at least one year, with the cost of the

lean - START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME
ities 9 Jul 98	3307			-
of U / U MAKE Ford	M000L F-250	Bors Sagar		
MODEL YEAR 1998	5.4L/Bi-Fuel Propane/Gasoline	Dept. of Fa		e
.		Merana, M.	pus 2310	
	DR	RIVER'S OPINION	IS	
P.E. RANGE OF THIS VEH	SUDHTLY WORSE	NOUGHLY THE SAME	D SUCHTLY BETTER	□мионя
ACCELERATION OF	THIS VEHICLE AS COMPARED	TO THE SAME TYPE OF V	ENCLE FUELED WITH GAS	OUNE
	2003-0-100-0			
MUCH WORSE	SUGHTER WORSE E	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH B
MANULVERABLITY	OF THIS VEHICLE AS COMPAR			
□ MUCH WORSE (ROUGHLY THE SAME	SLIGHTLY BETTER	MUCH B
OVERALL HANDLING	OF THIS VEHICLE AS COMPA	RED TO THE SAME TYPE SOUGHEY THE SAME	OF VEHICLE FUELED WITH	GASOLINE
	of THIS VEHICLE AS COMPARE			
Marian Contractor C		ROUGHLY THE SAME	SUGHTLY BETTER	O MUCH B
FASE OF OPERATION	Y OF THIS VEHICLE AS COMPA	MED TO THE SAME TYPE	OF VEHICLE FUELED WITH	CASCLINE
MUCH WORSE (SUGHTLY WORSE Z	ROUGHLY THE SAME	SUGHTLY BETTER	Пицока
	OF THIS VEHICLE AS COMPARE		F VEHICLE PUBLIC WITH C	ASOLINE
MUCH WORSE [SUGHTLY WORSE Z	ROUGHLY THE SAME	□ SUGHTLY BETTER	☐ MUCH 8
	DER BUYING A VEHICLE OF TH	HE SAME MAKE WITH TH		SVETEM2:
	CHES		□ 100	
		VER'S COMMEN		10.20
	Bed, we value your impre			omments.)
No Appel		WE IN FEE		46 15
THE OUT PAGE	off" In Telena	of FIRE T	YPE & open	res
Neco 10				rednes
			VARE ON HEESE	
	-			
Nort - Com			with april	
BEFORE-SE	A INFRASTRUCTUR	c. Recommen	is day pro	FILE
AD CORTIS	HO OF THE	Managaring	of plie 1	OHIELE.
		-5	~	
		- 15		

conversion to be partially offset by project funds and partially offset by in-kind contributions from the propane conversion company. However, this effort was cut short due to changes in Hawaii's fuels market, changes in certification requirements by the Environmental Protection Agency, and changes in vehicle availability from original equipment manufacturers; the allocated project funds for this effort were re-directed to public outreach and education activities.

The seventeen completed surveys are included as an appendix to this report. Some questions were not answered by respondents, so not all questions have the same total number of responses. Survey questions and results were:

		Legend:		
	-	=	+	++
much worse compared to the same type of vehicle fueled with gasoline	slightly worse compared to the same type of vehicle fueled with gasoline	roughly the same compared to the same type of vehicle fueled with gasoline	slightly better compared to the same type of vehicle fueled with gasoline	much better compared to the same type of vehicle fueled with gasoline

		-	II	+	+ +
Range of this vehicle:		9	7		
Acceleration of this vehicle:		7	10		
Braking of this vehicle:			17		
Maneuverability of this vehicle:		1	16		
Overall handling of this vehicle:			16		
Cargo capacity of this vehicle:	1	12	2		

Ease of operation:		1	15		
Overall opinion:		4	12	1	
Would you consider buying a vehicle of the same	Yes:				No:
make with the same engine and fuel system?	12				3

Comments:

- Was very impressed with overall performance. Good acceleration both from standstill and moving positions. Did not feel any difference switching between fuels. (Stafford Kiguchi, The Gas Company)
- Very impressive AF vehicle. Thanks. (Jim Yates, The Gas Company)
- Propane wasn't running properly. Used mostly gasoline. (Kyle Nakamura, Island Movers)
- (At this point, vehicle was taken in for service.)
- Worked great on both fuels. Went up Pali very well on both LP & gas no difference. Nice truck! (Dave Soderlund, Travel Plaza Transportation)
- No appreciable difference in fuel used! Vehicle is "transparent" in terms of fuel type & operator's need to "adjust" to different fuels. This vehicle can readily be marketed to private ownership by non-commercial users in areas with adequate refueling infrastructure.
 Recommend high profile advertising of the availability of this vehicle! (Ross Sasamura, City and County of Honolulu)
- Vehicle driven on propane runs little more smooth. Vehicle driven on gas has slightly more
 power. Vehicle on propane had little over 10 miles per gallon. This vehicle runs well on both
 fuel systems & is a very good truck. (Brian Nomura, Grace Pacific Corp.)
- Smooth running & quiet. Propane power was impressive. Propane tank takes up some bed space. Ford tough! (Verne Santos, B and C Trucking Company)
- Propane tank needs to be out of the bed. Otherwise the difference in operation LPG/gas is minor. Here in Hawaii it will take some time to have LPG readily available. Nice truck. Thanks for the opportunity to participate. (Dennis Washburn, Eagle Fleet Services)
- Engine runs very smooth on propane hot or cold. Fuel tank in bed takes up too much space. At this time cost of fuel to operate is too high (10 mpg on propane vs. 15.8 mpg on gas @ \$0.20/gal less) engine purrs at higher rpm but is really limited by poor gearing in trans. Very nice truck, a real head turner everywhere I went! If this truck could be more fuel efficient on propane, I would definitely have a propane truck of my own. (Dan Kinoshita, Honolulu Transfer and Storage)
- Over-all performance of vehicle on LP is less than gas. Hesitation on acceleration on LP.
 Constant upshift does shift on hilly operation on LP. Rough idle on LP. Bed too small w/tank
 in bed. Set-up would be OK as a work truck bed but for those who like driving trucks I don't
 think so. Where does one refuel with propane in Hawaii? (Steve Piper, Punahou School)
- Overall performance with propane is acceptable. I did not have the opportunity to push it, i.e. accelerate from zero to 60 on an open highway. The acceleration using propane was slightly less efficient on a cold engine than using gasoline. However, with a warm engine, I did not detect any difference. My driving was 80% city and 20% highway, and noticed worse mileage per gallon with the propane. I used 0.75 of the propane tank and logged 203.1 miles. After 100 miles on gasoline, my gauge indicated I used roughly 0.25 of a full tank. I would suggest a small gasoline tank as a reserve, so the propane tank in the bed of the demo vehicle could be sized down or incorporated elsewhere. Taking up bed space would not appeal to any truck user, unless you raised the entire bed. Cruising and passing were identical using either fuel. The manufacturers together with any taxing authorities should partner in creating incentives for propane dispensing firms at the wholesale and retail level. (Brian Lau, First Hawaiian Leasing)
- I was pleasantly surprised at the good performance. Engine size & gearing provided

satisfactory power, even in off-road conditions. Fuel tank position reduced cargo space. Auto shut-off valve feature made re-fueling simple, but position of bleeder valve was inconvenient. Overall very positive experience. Access to propane for the average consumer would be a difficulty. (Brian Nishida, Del Monte)

- Slight hesitation when accelerating. Obviously cargo space is less due to propane tank. Overall, performance was great! (Naalei Keaunui, Unisyn)
- Enjoyed driving this truck. Cargo area too small for our needs. Cost of propane a little to high. Thank you for letting us use the truck and participate. (Ben Post, E Noa Tours)
- Hesitation during acceleration from the idle position. Possible adjustment fine tuning needed.
 I noticed it took longer to start the vehicle with the propane compared to gas, especially
 during cold starts. Overall the vehicle ran fine and no differences between the 2 different
 types of fuel were noted. I especially like the long range of miles between fill-ups! (excellent
 truck). (Eric Enjada, HT&T Trucking)
- I really enjoyed the fact of being friendly to the environment with the fuel choice. The propane had a hesitation at starting off. Over all the truck performed well. The best part of my experience was the "PR" to raise the awareness of taking care of our planet. Thanks! (Jesse Halsoy, Schuler Homes Inc.)

Although the conversion of vehicles to LPG under this project was terminated, fleet managers continued to express interest in following developments in the area of alternative fuels.

A periodic "Clean Cities Newsletter" (shown at right), outlining progress at the local and national level, is sent to fleet managers. Also, workshops on issues of interest to fleet managers are scheduled as topics of interest occur.

The newsletters are also available on the Clean Cities website, http://www.hawaii.gov/dbedt/ert/cc/.



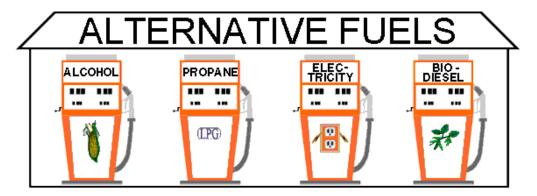
Supported Electron Marathons



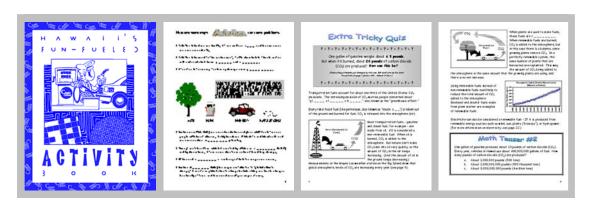
Members of Honolulu Clean Cities served as course marshals and official timers for the electron marathon events in 1997, 1998, 1999, 2000, 2001, and 2002. Hawaiian Electric Company (HECO) provided, to each school, a motor kit valued at \$850 and a cash grant of \$750 to purchase additional supplies and parts; HECO also covered the overhead costs of the program and final event, for a cost share in excess of \$30,000 per year.

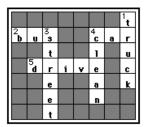
School participation was: 1998 - 27 teams; 1999 - 28 teams; 2000 - 21 teams; 2001 - 20 teams; 2002 - 24 teams. More information on the program is available from the HECO website, http://www.heco.com/.





Created, printed and distributed the 32-page Hawaii's Fun-Fueled Activity Book





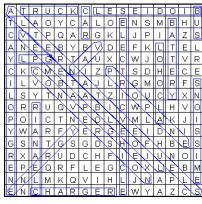
Members of Honolulu Clean Cities developed activities and fact sheets contained in the 32-page *Hawaii's Fun-Fueled Activity Book*.

Review and input on the draft activity book was received from parents, students, teachers, and others. The activities have transportation and clean fuels themes.

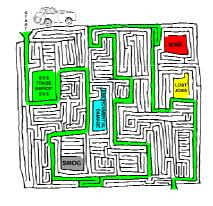


Activities include connect-the-dots; word search; crossword puzzles; alternative fuels maze; matching; and fill-in-the-blanks. Examples shown are a simple word search (at left) and a simple maze (at right).

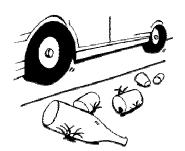


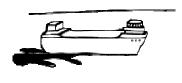


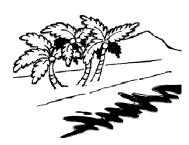
The activities lead students from easy activities and concepts to progressively more difficult and complicated ones. Examples shown are a large word search (at left) and a large maze (at right).



















A very "professional," but fun, look was sought for the activity book. Original art was commissioned in cases where commercially available "clip art" was not available or did not provide a consistent look and feel within the activity.

An example of original artwork, used in a "cause and effect" match-up activity in the pollution section, is shown at left.

Topics are listed below.

TOPICS:

■ Transportation

Coloring ... Connect-the-Dots ... Maze ... Matching ... Scramble ... Crossword ... Word Search ... Math Teaser

Pollution

Cause-and-Effect ... Fill in the words ... Extra Tricky Quiz ... Math Teaser

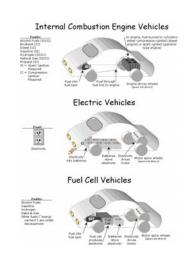
Clean Fuels

Matching ... Fill-in-the-Blanks ... True or False ... Find the Phrase ... Word Search ... Crossword ... Maze ... Summary

FACT SHEETS:



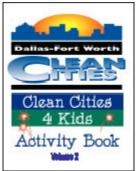
- Alcohol Fuels (Ethanol, Methanol)
- Biodiesel
- **■** Electric Vehicles
- Electricity
- **■** Fuel Cells
- Propane (LPG)
- Vehicles (Internal combustion, Electric, Fuel cell)



A "reference" section was included at the end of the activity book. Fact sheets for each of the fuels were developed, with sections entitled "What is it;" "Why __ Fuel;" and "Did you know." Finally, contact information was provided for both local experts and national experts (such as the alternative fuels data center and the alternative fuels hotline).

The activity book had two printings: the first run was of 1000 copies and the second was of 5000 copies. Activity books are distributed directly to schools, at "summer fun" and afterschool activity centers, through energy offices and coalition partners, and at public awareness events.

The Activity Book is available electronically on the Honolulu Clean Cities website. http://www.state.hi.us/dbedt/ert/activitybook/. The original files are available for use and editing by other Clean Cities coalitions, teachers, students, and others with an interest in the subject matter. Several requests for permission to use and modify the material have been received. The download page states: "Original files for use or modification for educational purposes only. Not to be commercially sold."



The Clean Cities Coalition of Dallas-Fort Worth is just one example of others appreciating and making use of the activities and fact sheets.

Files are provided on the Honolulu Clean Cities website in a format which lends itself to modification by other coalitions, as well as teachers and energy office personnel. It allows users to add locally-relevant information, such as fueling site locations, Clean Cities participants, any local laws or ordinances of interest, etc.

For example, the Honolulu version of the Activity book has very little information on natural gas, since LNG and CNG fuels are not available. In the Dallas-Fort Worth example, information on natural gas, the reasons for local interest in and support of that fuel, and contact information, was added.

Websites that link to the Activity Book pages on Honolulu Clean Cities' Website include:

CyberSleuth-Kids.Com

http://cybersleuth-kids.com/sleuth/Science/Transportation/

"Welcome to CyberSleuth-Kids.Com, an online search engine and guide for the K-12 student... Only sites that meet our standards are submitted into the database. Our goal is not to have the largest database of web sites. Quite the contrary, the goal is to have an exclusive and educationally valuable web site."

US Fuel Cell Council

http://www.usfcc.com/library.htm

"Excellent resources for teachers, students, and professionals. The US Fuel Cell Council has assembled a collection of Books, Articles, and Reports that discuss fuel cells and fuel cell related issues."

• Wisconsin K-12 Energy Education Program, Winter 2000 newsletter

http://www.uwsp.edu/cnr/wcee/keep/acrobat/Winter 2000 Vol.2 No1.pdf

"Hawaii's Fun Fueled Activity Book ... information sheets on fuels, vehicles, pollution, and energy technologies. Great for elementary students."

• Fuel Cells 2000's Fuel Cell Library

http://216.51.18.233/biblio.htm

"created by Honolulu Clean Cities to provide accurate, reliable information on 'alternative fuels' in a fun and interesting way."

Tennessee Energy Education Network

http://www.state.tn.us/ecd/pdf/energy/energy materials.pdf

• Multnomah County Library Homework Center

http://www.multcolib.org/homework/trans.html

"This site from Hawaiian State Energy, Resources and Technology Division provides upper elementary and middle school youth with basic facts about alternative fueled vehicles and fun activities to learn more about them"

Advanced Vehicle Technology Institute

http://www.etvi.org/General/New links.html

"is pleased to provide you with some of our favorite electric vehicle links"

• North East Sustainable Energy Association

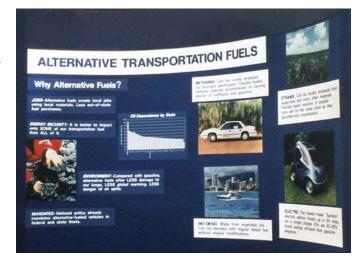
http://www.nesea.org/greencarclub/links/info.html

"The activities are appropriate for grades 3-6, the fact sheets are appropriate for grades 7-12. From the State of Hawaii"

Produced displays that appeal to non-traditional stakeholder candidates

Four portable tabletop display units were purchased. Signage was developed to show alternative fuels and vehicles in use in Hawaii, as well as to describe the importance of alternative fuels. Using re-positionable graphics, the content is changed to match the interest of the expected audience.

For large exhibitions, where people are far from the display, text and graphics are large and simple.



For smaller areas where attendees can take their time to read and browse, more information can be provided. The display shown at right was at the Mayor's Asia-Pacific Environmental Summit.

Promotional items were used to attract people to the exhibits and to provide them with a tangible, take-away reminder of alternative fuels. Key rings, pencils, and pens were designed, ordered, and distributed.





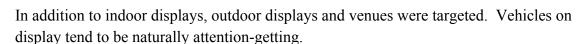


The Honolulu Clean Cities coalition developed the slogan "Clean Fuels for Clean Air" to describe the connection between the name (Clean Cities) and the topic (alternative fuels).

This slogan is used on displays,

promotional items, and the Clean Cities letterhead.

The pens are particularly well-suited to be distributed with the activity books. Exhibit attendees of all ages have been seen taking a break, using the pen to do activities in the book.



A bright red truck, with "Honolulu Clean Cities" graphics and "clean fuels for clean air" (shown at right, in the City Lights parade) was developed for this purpose and has been an extremely effective display unit. In the picture at right, a replica of the Aloha Tower is in the bed of the truck. Since the venue was a Christmas parade, a toy train and Christmas scene surround the base of the tower. This truck was also used in the propane demonstrations described earlier.



Another means of drawing attention to the alternative fueled vehicles which are in everyday use on Hawaii's roads is through the use of colorful bumper stickers and decals. Electric-, biodiesel-, and propane- specific decals were designed, ordered, and applied to vehicles. The remaining decals will be provided to owners of alternative fuel vehicles upon request.

Electric Powered!

For a Cleaner and Greener Hawaii In the photo at left, the



"Electric Powered" decal can be seen on the side of the truck.

Also, fuel-neutral "clean fuels for clean





were designed, ordered, and applied; they are versatile, as they can be used on any alternative fuel vehicle.

Participated in exhibitions, trade shows, conferences, seminars, parades, and other events.

Clean Cities stakeholders participated in more than twenty events over the project period, including "Kids day" exhibits at shopping centers, an environmental symposium in conjunction with the Hawaii State Science and Engineering Fair, an auto show, three transportation association conventions, a meeting of the Hawaii Automotive Repair and Gasoline Dealers Association, several health and wellness fairs, and other events.



This electric truck was used as the pace vehicle for the Johnny Faerber Men's 10k Run in Honolulu, May 9, 1999. The front-of-the pack runners certainly appreciated a vehicle that didn't put out pollutants, since they're following right behind. (A lungful of vehicle exhaust doesn't help their performance or their health.) Some of the runners were so impressed, they said, "Electric vehicles should be used as pace vehicles in all races!" This

air" bumper stickers and "clean fuel vehicle" decals

photo was taken just before the race started. Shown are Howard Wiig (standing), who drove; and (seated on the toolbox) Mike Tymm, sports writer.

One annual event which has become a tradition for Honolulu Clean Cities coalition is the annual Honolulu City Lights parade. Each year, Clean Cities decorates a variety of alternative fuels vehicles – ranging from GEM neighborhood electric vehicles to alcohol-fueled vehicles, propane vehicles, electric buses, and even manufacturers' demonstration electric vehicles.



The photo at left shows one of the City and County of Honolulu's propane-powered tow trucks which participates with Clean Cities in Honolulu's annual Electric Light Christmas Parade.

The photo at right shows the original "Clean Cities" sign used with the electric bus.

More recently, a backlit sign with the "Honolulu Clean Cities" logo has been

developed. The new sign is more durable and can be used for daytime as well as nighttime events.





The photos at right show Clean Cities at the annual "health and wellness" fair put on by Momilani Elementary School.



Community
outreach events,
such as the Earth
Day event shown
at left and in the
photos below,
provide an
opportunity for
Clean Cities
stakeholders to





demonstrate alternative fuels and vehicles and network with other exhibitors, in addition to informing the public.

Vehicles are naturally attention-getting, whether on display indoors or outdoors. Colorful decals attract attention, provide information on the type of fuel, and give the message:

"clean fuels for clean air."









Alternative fuel vehicles are on the left; "Classic Cars" are on the right.

In addition to exhibits and parades, the Honolulu Clean Cities Coalition has hosted and presented at workshops and seminars relating to clean fuels. To assist in delivering polished, professional presentations and well-run workshops, the Coalition uses computer-based

presentations and LCD projection equipment. An LCD computer projector was purchased for this purpose.





EXPENSES / COST SHARE

The original proposal stated that for every \$1 of funding provided by the U.S. Department of Energy for this project, \$1.20 would be provided by the partners. Actual contributions by project partners were significantly greater than this. The summary of partner contributions, both cash and in-kind, is provided below.

Activity	С	City and ounty of lonolulu	 isco / EA gineering	HECO / USN / HEVDP	inova / GEM	НΤ	RT / ESH	Р	nmins / acific odiesel	TOTAL
LPG Vehicle Conversions	\$	10,032	\$ 8,470	\$ -	\$ -	\$	1	\$	729	\$ 19,231
Co-sponsorship and support of the Hawaii "Electron Marathon"	\$	1,337	\$ 162	\$ 116,189	\$ 289	\$	155	\$	643	\$ 118,775
Drafting, publication and distribution of ATF/AFV activity books	\$	5,076	\$ 2,044	\$ 1,370	\$ 330	\$	248	\$	987	\$ 10,055
Exhibits, displays, and participation in conferences, trade shows, seminars, parades, and other events	\$	15,297	\$ 16,661	\$ 10,001	\$ 4,369	\$	2,236	\$	5,876	\$ 54,439
TOTAL	\$	31,742	\$ 27,338	\$ 127,560	\$ 4,987	\$	2,639	\$	8,235	\$ 202,501
Cost match:	4	.07 : 1								
Federal: Non-Federal:	\$	49,789 202,501								

Multi-tiered Alternative Transportation Fuel Outreach Program - Grant No. DE-FG51-97R020881

SUMMARY

The completed project is an excellent example of outreach programs to recruit new, non-traditional stakeholders. Effective means of sharing usable activities with other coalitions were demonstrated. The methods used to increase the visibility of alternative fuels and alternative fuel vehicles are recommended to other Clean Cities coalitions and groups seeking to broaden the community base of support and understanding of clean alternative fuels.



Appendix

Hours Contributed by Task

LPG Vehicle Conversions	City & County of Honolulu (prof.)	,	Gasco / EA Engineeri ng	HECO / USN / HEVDP	Enova / GEM	HT&T / ESH	Cummins / Pacific Biodiesel
Identify EPACT covered fleets in the anticipated private and municipal fleets Final Rule.	10	10	3				5
Identify fleets for potential participation in LPG conversion	10		10				5
Prepare, discuss, and review information packets on LPG	5	5	20				5
Prepare questionnaire	8	4	8				
Meet with fleets prior to LPG demonstration	60	30	60				
Deliver vehicle; discuss questionnaire; follow up	30	15	30				
Research requirements and costs for vehicle conversion	40		120				2
Project administration and reporting	20	10	10			, and the second	
Subtotal	183	74	261	0	0	0	17

Co-sponsorship and support of the Hawaii "Electron	,	City & County of Honolulu		HECO / USN / HEVDP	Enova / GEM	HT&T / ESH	Cummins / Pacific Biodiesel
Marathon"	(prof.)	(clerical)	ng				
Provide financial support to marathon.	10						
Participate in marathon-related activities prior to event	5	1		60	2		
Provide coalition display at marathon.	10			10			10
Evaluate success from event, review lessons learned.	5		5	5	5	5	5
Subtotal	30	1	5	75	7	5	15

	City &	City &	Gasco /	HECO /	Enova /	HT&T /	Cummins /
	County of	County of	EA	USN /	GEM	ESH	Pacific
Drafting, publication and distribution of ATF/AFV activity	Honolulu	Honolulu	Engineeri	HEVDP			Biodiesel
books	(prof.)	(clerical)	ng				
Draft activity book using stakeholder contributions.	40		40	20	5	5	10
Distribute first draft to stakeholders for review and comments.	10	2	3	3	3	3	3
Revise as needed and submit to schools for comment.	10	2					
Incorporate necessary changes and submit final form document for printing.	20	2					
Distribute activity books to schools.	20	2	20	20	0	0	10
Survey teachers on appearance, value and perception of book.	10	2					
Develop and test web-accessible version of activity book and original files	4		4	4	4	4	4
Respond to requests from others to use activities or receive copies of the activity books	10		4				
Update activity book	10		10	5	2	2	3
Re-print activity book	2		2	2			_
Project administration and reporting	20	10	10			·	·
Subtotal	110	10	63	43	8	8	23

Exhib	its, displays, and participation in conferences, trade shows, seminars, parades, and other events	City & County of Honolulu (prof.)	City & County of Honolulu (clerical)	Gasco / EA Engineeri ng	USN /	Enova / GEM	HT&T / ESH	Cummins / Pacific Biodiesel
	Research, discuss and agree upon acceptable variety of educational and promotional items, signage, and graphics for exhibits and displays.	40	10	20	20	10	10	20
	Design educational and promotional items as necessary.	20		20	20	20	20	20
	Seek supplier with best price and value for items agreed upon.	20	2					
	Place order	5	2	2				
	Retrofit signage to existing stakeholders' AFV.	20	20	20	5	5	5	5
	Utilize new promotional items, signage, and graphics products at events:							
3/21/98	Electron Marathon, 8-1	6		6	6	6		6
6/5/98	Momilani Elem. School	5		5				
6/6/98	State Truck Driving Comp	7		4		6		3
9/10/98	HTA convention, Kauai	12		12				12
9/11/98	HTA convention, Kauai	6		6				6
9/12/98	HTA convention, Kauai	9		9				9
12/4/98	xmas parade	8		5	15		6	8
1/15/99	auto show to 1/16					12		
	Electron Marathon, 8-1	6		6	60	6		6
3/30/99	"Energy, Economy, and Environment" symposium in conjunction wi	th HSSEF						
	xmas parade	10		3	15	10		5
3/25/00	Electron Marathon	7			60	7		
12/2/00	xmas parade	8			15	4	6	4
3/24/01	Electron Marathon	8				4		4
5/4/01	Mayor's Environmental Summit	6						7
5/5/01	Mayor's Environmental Summit	6						3
5/6/01	Mayor's Environmental Summit	6						2
	xmas city lights parade	10			6	5	6	5
12/2/01	xmas parade-Waikiki	5			5			
	Electron Marathon				75			
	Ethanol Workshop						6	
12/7/02	xmas parade	12			5	4	6	5
	Provide financial and personnel support to stakeholders purchasing and displaying new AFV.	10	2	10				
	Ensure use of vehicle maximizes ATF/AFV exposure to the public.	2		2	2	2	2	2
	Survey public whenever possible at events to determine impact and influence of exhibits, displays, and outreach/promotional materials.	5		5	5	5	5	5
	Subtotal	259	36	135	314	106	72	137

Cash Contributions from Partners by Task

Electron Marathor	າ 1998	\$	43,200.00
	1999	\$	21,850.00
	2000	\$	15,750.00
	2001	\$	15,000.00
	2002	\$	18,000.00
	from HECO:	\$	113,800.00
Truck	Cost	\$	24,279.95
	Fed. Funds	\$	(12,000.00)
	From Gasco:	\$	12,279.95
Objective and December	1000	•	000.00
Christmas Parade	1998	\$	600.00
	1999	\$	600.00
	2000	\$	600.00
	2001	\$	600.00
	2002	\$	600.00
from City	and County:	\$	3,000.00

Multi-tiered Alternative Transportation Fuel Outreach Program – Grant No. DE-FG51-97R020881

Project Expenditures

DATE	REF#			
2/16/1999	SWV 2120		\$5,000.00	Clean Cities: for electron marathon
				ToCC:\$12000 for LPG truck; \$1807 for 1000
9/1/2000	B458		\$15,307.00	activitybooks; \$1500 for exhibit items
9/6/2001	B596	Printing/Display	\$6,867.66	Skyline and Hagadone
				PO6018 7/12/01 \$2201.03 Skyline tabletop display
				PO6019 8/21/01 \$4663.51 Hagadone 5000 activity
				books
9/6/2001	B598	Workshop/Printing	\$347.91	PO6020 Fleet Street Graphics 100 bumperstickers
2/6/2002	B2075	Contract	\$13,776.83	PO6045 Hagadone 1200 (6 types x 200) decals
5/28/2003	B2704	Other	\$25.94	Kinko's - printing and lamination of 11"x17" posters
7/9/2003	B00021	Equipment	\$3,719.96	PO Monsterdisplays.com (3) 6' tabletops
7/9/2003	B00021	Equipment	\$1,350.96	PO HewlettPackard LCD Projector
				PO18375 Marketing Connections 5000 pens
7/9/2003	B00021	Other	\$2,052.32	bicstickclik clear
		subtotal	\$48,448.58	
indirect charges				
2003	0.00%	7,149.18	0.00	
2002	3.29%	20,992.40	690.65	
2001	0.00%	0.00	0.00	
2000	3.17%	15,307.00	485.23	
1999	3.29%	5,000.00	164.50	
1998	5.07%		0.00	
		indirect	\$ 1,340.38	
		grand total	\$49,788.96	



Clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito
The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawall, Department of Business, Economic Development and Tourism

American Lung Association of Herwaii

American Public Works Association -Hewall Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

ummine Hawell Diesel Power, Inc.

Electric Vehicle Association of Haweli

Fleet Street Graphics

HT & T Truck Center

Hewali Detroit Dissel Allison

Hawaii Electric Vehicle Demonstration Project

Haweii Naturel Energy Institute

Hemell Transportation Association

Hamailan Electric Co.

Oahu Fleet Safety Organization

Pacific Blodlesei

Pecific Mechinery

Pacific International Center for High Technology Research

nisyn Sloweste Technology

Department of Energy, Peable Site Office

U.S, Bectricar

U.S. General Services Administration, Fleet Management Branch

RECORD	OF DRIVER'S	COMMENTS	FOR	THIS	VEHICLI
111			2 - 2 11 12		22 Dans R 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME				
7/11/98	186	1021 81498	1021	5.00 pm				
MAKE	MODEL	DRIVER'S NAME & SIGNA	TURE					
Ford	F-250	Brad Saito Blest						
MODEL YEAR	ENGINE/FUEL	DRIVER'S BUSINESS NAM						
1998	5.4L/Bi-Fuel Propane/Gasoline	The Gas Company 594.5584 office						
		The Gas Company 594,5584 office P.D. Box 3000 251-0244 pager Honolulu, HI 96802-3000						
	Honolulu, HI 96802-3000							
	DRI	VER'S OPINIONS						
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUEL	_ED WITH GASOLINE:					
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER				
ACCELERATION OF THIS	VEHICLE AS COMPARED TO	O THE SAME TYPE OF VEHI	CLE FUELED WITH GASOLI	NE:				
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER								
BRAKING OF THIS VEHIC	LE AS COMPARED TO THE	SAME TYPE OF VEHICLE FU	IELED WITH GASOLINE:	***************************************				
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER								
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE	D TO THE SAME TYPE OF V	EHICLE FUELED WITH GAS	OLINE:				
☐ MUCH WORSE ☐ SL	☐ MUCH WORSE ☐ SLIGHTLY WORSE ☑ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER							
	THIS VEHICLE AS COMPAR		VEHICLE FUELED WITH GA	SOLINE:				
☐ MUCH WORSE ☐ SL	IGHTLY WORSE 🗹 R	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER				
1	IS VEHICLE AS COMPARED		_					
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER				
	THIS VEHICLE AS COMPAR							
☐ MUCH WORSE ☐ SL				MUCH BETTER				
· ·	HIS VEHICLE AS COMPARED							
☐ MUCH WORSE ☐ SL			· · · · · · · · · · · · · · · · · · ·	MUCH BETTER				
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE S		ME ENGINE AND FUEL SY:	STEM?:				
	DRIV	ER'S COMMENTS						
(Good or Bad	, we value your impres			ments.)				

			·					





clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito
The Gas Company

Stakeholders:

City and County of Honolulu

State of Hewell, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Heweli Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Compan

Cummins Hawell Diesel Power, Inc.

Electric Vehicle Association of Haweii

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Dissei Allison

Hawaii Electric Vehicle Demonstration Project

Hewell Netural Energy Institute

Hawali Transportation Association

Hewailen Electric Co.

Oahu Fleet Safety Organization

Pacific Blodlese

Pacific Machinery

Pacific international Center for High Technology Research

Unisyn Blowsete Technology

. Department of Energy, Pacific Site Office

U.S. Electric

U.S. General Services Administration Floet Management Branch

RECORD OF DRIVER'S COMM

_ ·		
START DATE	START MILEAGE	END DATE
MAKE Ford	MODEL F-250	DRIVER'S A
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S B

Stafford J Kiguchi

Manager Communications

841 Bishop Street Suite 1700 PO Box 3000 Honolulu Hawaii 96802 3000 Telephone 808 535 5928 Fax 808 535 5944

DRIVER'S OPINIONS						
RANGE OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
■ MUCH WORSE ■ SLIGHTLY WORSE ■ ROUGHLY THE SAME ■ SLIGHTLY BETTER ■ MUCH BETTER						
ACCELERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
BRAKING OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
MANEUVERABILITY OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE ROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER						
OVERALL HANDLING OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE ROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER						
CARGO CAPACITY OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
EASE OF OPERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
OVERALL OPINION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:						
☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
WOULD YOU CONSIDER BUYING A VEHICLE OF THE SAME MAKE WITH THE SAME ENGINE AND FUEL SYSTEM7:						
☐ YES ☐ NO						
DRIVER'S COMMENTS						
(Good or Bad, we value your impression of this vehicle. Please give us your comments.)						
has very impressed with overall gestermance bord acceleration						
both from standstill and moving positions. Did not feel						
any difference switching between frets.						





Clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer **Brad Saito**

The Gas Company

Stakeholders:

City and County of Honolulu

State of Heweil, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Howell Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hewell Diesel Power, Inc.

Electric Vehicle Association

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Diesel Ailison

Hawail Electric Vehicle Demonstration Project

Hawaii Natural Energy institute

Heweil Transportation Association

Hawaiian Electric Co.

Oshu Fleet Safety Organization

Pacific Blodlesel

Pecific Machinery

Pacific International Center for High Technology Research

Unlayn Blowaste Technology

. Department of Energy, Pecific Site Office

U.S. General Services Administration, Fleet Management Branch

RECORD	OF DRIV	/FP'S	COM
THE SAL PERE		# H H R R R R R	V - C - F W B V

RECO	RD OF DRIVER'S	COMN	Citwens Inaras Sarvices	
START DATE	START MILEAGE	END DATE	Jim R Yates	
3/5/98	1031	8/7/1	Vice President & Genera	l Manager
MAKE Ford	MODEL F-250	DRIVER'S I	841 Bishop Street Suite PO Box 3000 Honolulu Telephone, 808 535 590 Eax, 808 535 5942	e 1700 Hawaii 96892 3000 _B a
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	The GA	Causany Gev. MGR	
	DRI	VER'S OPINIO	NS	
/	EAS COMPARED TO THE SA			
Much worse 🗹 sl	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
ACCELERATION OF THIS	,	O THE SAME TYPE OF ROUGHLY THE SAME	VEHICLE FUELED WITH GASO	OLINE:
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			LI WOCH BETTER
BRAKING OF THIS VEHICE ☐ MUCH WORSE ☐ SL		SAME TYPE OF VEHIC ROUGHLY THE SAME	LE FUELED WITH GASOLINE: SLIGHTLY BETTER	☐ MUCH BETTER
	IGHTLY WORSE (2)	TOUGHLY THE SAME		☐ MOCH BELLER
MANEUVERABILITY OF T		D TO THE SAME TYPE ROUGHLY THE SAME	OF VEHICLE FUELED WITH G	ASOLINE:
			E OF VEHICLE FUELED WITH	GASOLINE:
☐ MUCH WORSE ☐ SL	IGHTLY WORSE L	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
CARGO CAPACITY OF TH	•	TO THE SAME TYPE OR OUGHLY THE SAME	OF VEHICLE FUELED WITH GA	SOLINE: MUCH BETTER
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR	RED-TO THE SAME TY	PE OF VEHICLE FUELED WITH	GASOLINE:
☐ MUCH WORSE ☐ SL		OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
OVERALL OPINION OF T	HIS VEHICLE AS COMPAREI	O TO THE SAME TYPE	OF VEHICLE FUELED WITH GA	ASOLINE:
☐ MUCH WORSE ☐ SL		OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
WOULD YOU CONSIDER		SAME MAKE WITH T	HE SAME ENGINE AND FUEL S	SYSTEM7:
(Good or Bac		ER'S COMMEI	NTS e. Please give us your co	omments.)
	/			
Ve	ery sufremin AF		, <i>f</i>	
	·	H	cantes /	
			Juin Male	
Market and the second			<u> </u>	
	100000000000000000000000000000000000000			
	·			



160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Heweil, Department of Business, Economic Development and Yourlam

American Lung Association of Hawaii

American Public Works Association Hewaii Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hawaii Diesei Power, Inc.

Electric Vehicle Association of Hewell

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Diesel Allison

Hewali Electric Vehicle Demonstration Project

Hawaii Natural Energy Institute

Hawaii Transportation Association

Hawailan Electric Co.

Oshu Fleet Safety Organization
Pacific Biodiesel

Dealls Streets ...

Psoffic International Center for High Technology Research

Unisyn Blowaste Technology

5. Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration, Floot Management Branch

START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME		
12 AUGUST 98	1197	8/20/98	1530	9:20		
Ford F-250 DRIVER'S NAME & SIGNATURE Ky/K Nakamera // Jhanne						
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAME AND ADDRESS IS GOOD MENCES Inc PO BOX 17865 Hon, HI 96817				
	DRI	VER'S OPINIONS				
RANGE OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE ROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER						
ACCELERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE Schightly worse Roughly the Same Scightly Better Much Better						
BRAKING OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE SUBJECTION MUCH BETTER						
MANEUVERABILITY OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: ☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER						
OVERALL HANDLING OF		ROUGHLY THE SAME		SOLINE:		
CARGO CAPACITY OF TH ☐ MUCH WORSE ☐ SLI		TO THE SAME TYPE OF VEROUGHLY THE SAME		DLINE:		
	THIS VEHICLE AS COMPAR	RED TO THE SAME TYPE OF	_	ASOLINE:		
OVERALL OPINION OF TH		O TO THE SAME TYPE OF VI				
WOULD YOU CONSIDER		SAME MAKE WITH THE SA	AME ENGINE AND FUEL SYS	STEM?:		
(Good or Bad		ER'S COMMENTS		ıments.)		
Progenc N	asn't running p	reperty. Used.	mastly garaline	<i>s</i>		
		,	<u> </u>			



Jean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito
The Gas Company

Stakeholders:

City and County of Honoiulu

State of Hawaii, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummine Heweil Diesel Power, Inc.

Electric Vehicle Association of Hewali

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Diesel Allison

Hawaii Electric Vehicle Demonstration

Hawaii Natural Energy Institute

Hawaii Transportation Association

Haweijan Electric Co.

Oshu Fleet Sefety Organization

Pacific Blodiesel

Pacific Machinery

Pacific International Center for High Technology Research

Unisyn Blowsete Technology

Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration

			,				
START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME			
1012498	2709	11/2/98	3083	13:30			
MAKE Ford	MODEL F-250	DRIVER'S NAME & SIGNATURE DAVE SODERLUND SOLD SOLD DAVE DAVE SOLD DAVE					
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAME AND ADDRESS TRAVEL PLAZA TRONSFORTATION, WES BIR PINE ST HOMOLULU LHL 96817					
<u></u>	DRI	VER'S OPINIONS					
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUE	LED WITH GASOLINE:				
☐ MUCH WORSE ☐ SLIGHTLY WORSE							
ACCELERATION OF THIS	VEHICLE AS COMPARED TO	O THE SAME TYPE OF VEHI	CLE FUELED WITH GASOLI	NE:			
☐ MUCH WORSE ☐ SL	IGHTLY WORSE 💢	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER			
BRAKING OF THIS VEHIC	LE AS COMPARED TO THE						
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE		_	SOLINE:			
□ MUCH WORSE □ SL	THIS VEHICLE AS COMPAR IGHTLY WORSE	-		MUCH BETTER			
CARGO CAPACITY OF TH	IIS VEHICLE AS COMPARED IGHTLY WORSE		EHICLE FUELED WITH GASO SLIGHTLY BETTER	DLINE: MUCH BETTER			
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR			ASOLINE:			
OVERALL OPINION OF THE	HIS VEHICLE AS COMPARED			OLINE:			
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE		AME ENGINE AND FUEL SY	STEM7:			
(Good or Bad	DRIV I, we value your impres	ER'S COMMENTS		nments.)			
WORKED GRADE ON BOTH FUELS,							
WEST OF PALI VERY WELL ON POTH LP							
\$ GAS - NO PIFFERENCE. NICE TRUCK							



Clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito
The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawail, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association Heweil Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Heweil Diesel Power, Inc.

Electric Vehicle Association of Heweil

Fleet Street Graphics

HT & T Truck Center

Herwail Detroit Dissel Allison

Hawaii Electric Vehicle Demonstration Project

Henvali Netural Energy Institute

Haweii Transportation Association

Hawaiian Electric Co.

Oshu Fleet Safety Organization

Pacific Blodiesel

Pacific Machinery

Pecific International Center for High Technology Research

Unisyn Bloweste Technology

3. Department of Energy, Pecific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Branch

RECORD	OF DRIVER'S	COMMENTS	FOR TH	IS VEHICLE
8 4 3 L L		9 L	2 2 2 4 3 4 3 4	

START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME		
9 701 98	3307					
MAKE Ford	d F-250 DRIVER'S NAME & SIGNATURE ROSS SASAMUZA					
model year 1998 5.4L/Bi-Fuel Propane/Gasoline Dept. of Facility Maintenance 160 Ahul St. Honormen, HI 96813-5510						
	DRI	VER'S OPINIONS				
		ME TYPE OF VEHICLE FUEL				
MUCH WORSE Z SLI	☐ MUCH WORSE Ø SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER					
ACCELERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE ROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER						
	5.					
☐ MUCH WORSE ☐ SLI		SAME TYPE OF VEHICLE FUR ROUGHLY THE SAME		☐ MUCH BETTER		
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE	D TO THE SAME TYPE OF V	EHICLE FUELED WITH GAS	OLINE:		
☐ MUCH WORSE ☐ SLI	GHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER		
OVERALL HANDLING OF		ED TO THE SAME TYPE OF COUGHLY THE SAME		SOLINE:		
CARGO CAPACITY OF TH	7	TO THE SAME TYPE OF VE		PLINE:		
EASE OF OPERATION OF	/	ED TO THE SAME TYPE OF		SOLINE:		
OVERALL OPINION OF TH		O TO THE SAME TYPE OF VE		DLINE:		
WOULD YOU CONSIDER		SAME MAKE WITH THE SA	ME ENGINE AND FUEL SYS	STEM?:		
(Good or Bad		ER'S COMMENTS sion of this vehicle. Pl		ments.)		
No APPRECIA	ABLE DIFFEREN	CE IN FUEL TYPE	USED! VEHICLE	E 1S		
"TRONS PARENT	" IN TERMS O	OF FUR TYP	E & OPERATOR	<u> </u>		
NEED TO "	ADJUST" TO 0	IFFORENT FIEL	LS. THIS VE	HICLE		
CAN READIL	4 BE MARKE	IN AREAS	RE OWNERSHIP	<i>6</i> 4		
NON - COMMO	LCIAL USOUS	IN AREAS	WITH ADEQUA	<u> 16 /</u>		
REFUELINE	INFRASTRUCTURE	LECOMMEND 2	HUH PROFIL	(E		
AD VORTISING	of THE A	VALLABILITY E	of THIS VEH	ICLE!		
			<u></u>			



"Clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawali, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Howell Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hawaii Diesel Power, Inc.

Electric Vehicle Association of Hewsii

Fleet Street Grephics

HT & T Truck Center

Hewaii Detroit Diesei Allison

Hewaii Electric Vehicle Demonstration Project

Hewali Netural Energy Institute

Hawaii Transportation Association

Hawaiian Electric Co.

Oahu Fleet Safety Organization

Pacific Blodlesei

Pacific Machinery

Pacific International Center for High Technology Research

Unisyn Bloweste Technology

3. Department of Energy, Pacific Site Office

U.S. Electric

U.S. General Services Administration, Fleet Management Branch

KECO	KD OF DRIVER'S	COMMENTS F	OK I HIZ AFHIC	<u>,Lt</u>	
START DATE	START MILEAGE	END DATE 33,	END MILEAGE 4364	END TIME	
MAKE	MODEL		ATURE CONTACT : ROY	TAKIMOTO	
Ford	F-250	BRIAN NOM	URA BUM	Monua	
MODEL YEAR 1998	engine/fuel 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAI GRACE PACI PO BOX 78 HON, HI 9	ME AND ADDRESS		
	DRI	VER'S OPINIONS			
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUE	LED WITH GASOLINE:		
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER	
ACCELERATION OF THIS	VEHICLE AS COMPARED TO		ICLE FUELED WITH GASO	LINE:	
☐ MUCH WORSE ☐ SL			SLIGHTLY BETTER	☐ MUCH BETTER	
BRAKING OF THIS VEHIC	LE AS COMPARED TO THE	SAME TYPE OF VEHICLE F	UELED WITH GASOLINE:		
☐ MUCH WORSE ☐ SL	_		SLIGHTLY BETTER	☐ MUCH BETTER	
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE	D TO THE SAME TYPE OF \	VEHICLE FUELED WITH GA	SOLINE:	
☐ MUCH WORSE ☐ SL	IGHTLY WORSE S	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER	
OVERALL HANDLING OF	THIS VEHICLE AS COMPAR	ED TO THE SAME TYPE OF	VEHICLE FUELED WITH G	ASOLINE:	
☐ MUCH WORSE ☐ SL	\		SLIGHTLY BETTER	☐ MUCH BETTER	
CARGO CAPACITY OF TH	IIS VEHICLE AS COMPARED	TO THE SAME TYPE OF VI	EHICLE FUELED WITH GAS	SOLINE:	
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER	
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR	4000	VEHICLE FUELED WITH G	GASOLINE:	
OVERALL OPINION OF TH	HIS VEHICLE AS COMPARE		EUICI E ELIEI ED WITH CA	SOLINE:	
☐ MUCH WORSE ☐ SL	· · · · · · · · · · · · · · · · · · ·	ROUGHLY THE SAME			
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE	SAME MAKE WITH THE SA			
	DDN	CDIC CORRECTATO	•		
(Good or Bad	DRIV l, we value γour impres	ER'S COMMENTS ssion of this vehicle. P		mments.)	
1) VEHICU	E DRIVEN ON	FKUPANE RUNZ	S LITTLE MORE	SMOUTH	
a) VEHICLE DRIVEN ON FROPANE RUNS LITTLE MORE SMOOTH a) VEHICLE DRIVEN ON GAS HAS SLIGHTLY MORE POWER					
3) VEHICLE ON PROPANE HAD LITTLE OVER 10 HOW MILES PER GAMON					
1 , ,	EHICLE RUNS				
	GRY GOOD TR			The state of the s	
	the state of the s	and the state of t			



Clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito The Gas Company

Stakeholders: City and County of Honolulu

State of Hawali, Department of Business, Economic Development and Tourism

American Lung Association of Hewail American Public Works Association -Hawaii Chapter

Ameron HC & D

wer Environmental Ind. LLC

The Gas Company

Cummins Hawait Diesel Power, Inc.

Electric Vehicle Association of Hewail

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Dissel Allison

vali Electric Vehicle Demonstration Project

Hawaii Natural Energy Institute

ail Transportation Association

Hewailen Electric Co.

Oahu Fleet Safety Organization

Pecific Blodiesel

Pacific Machinery

a international Center for High Technology Research

Unisyn Bioweste Technology

3. Department of Energy, Pacific Site Office

U.S. General Services Administration, Floot Management Branch

RECORD	OF DRIVER'S	COMMENTS	FOR	THIS	VEHICL	F
nculnu	OFUNIVENS	TTIMINALIM 2			W L TILL	

START DATE	START MILEAGE	END DATE 12-2-98	END MILEAGE	END TIME			
MAKE Ford	MODEL F-250	DRIVER'S NAME & SIGNATURE Levre Lantos					
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	Por Box 700 Liea, HI 96-101					
	DRI	VER'S OPINIONS					
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA		LED WITH GASOLINE: SLIGHTLY BETTER	☐ MUCH BETTER			
ACCELERATION OF THIS	VEHICLE AS COMPARED TO		CLE FUELED WITH GASOLI SLIGHTLY BETTER	NE: ☐ MUCH BETTER			
BRAKING OF THIS VEHIC	LE AS COMPARED TO THE			☐ MUCH BETTER			
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE	•	/EHICLE FUELED WITH GAS SLIGHTLY BETTER	OLINE: MUCH BETTER			
OVERALL HANDLING OF	THIS VEHICLE AS COMPAR		_	ASOLINE:			
CARGO CAPACITY OF TH	IS VEHICLE AS COMPARED		EHICLE FUELED WITH GASO	DLINE:			
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR			ASOLINE:			
OVERALL OPINION OF THE	IIS VEHICLE AS COMPARED			OLINE:			
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE		AME ENGINE AND FUEL SY	STEM7:			
(Good or Bad	DRIV , we value your impres	ER'S COMMENTS		nments.)			
R		quiet. D	ropane, ja	· · · · · · · · · · · · · · · · · · ·			
some be							
F027 T0	FORD TOUGH !						
•							



Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricer

Treasurer
Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawaii, Department of Business, Economic Development and Tourism

American Lung Association of Hewali

American Public Works Association -Hewell Chapter

Ameron HC & D

Brower Environmental Ind. LLC

The Gas Company

Cummins Hawaii Diesel Power, Inc.

Electric Vehicle Association of Hawaii

Fleet Street Graphics

HT & T Truck Center

Haweii Detroit Diesel Allison

Hawell Electric Vehicle Demonstration Project

Hawaii Natural Energy Institute

Hewait Transportation Association

Hawaiian Electric Co.

Oahu Fleet Safety Organization

Pacific Biodiesel

Pacific Machinery

Pacific International Center for High Technology Research

Unisyn Bioweste Technology

S. Department of Energy, Pacific Site Office

U.S. Electric

U.S. General Services Administration, Fleet Management Branch

RECORD	ΛF	DRIVER'S	COMMENTS	FOR	THIS	VEHICI E
newand		UNIVENO		run		VETILLE

1 1 1 mm				
START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME
12/9/98	4748	12-17-98	2131	
MAKE	MODEL	DRIVER'S NAME & SIGNA		
Ford	F-250	DENUIS WA	isubural	
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAME RAGLE FLEET 99-1269 AICA HI		
	DRI	VER'S OPINIONS		
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUE	LED WITH GASOLINE:	
☐ MUCH WORSE X SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
ACCELEDATION OF THE				
ACCELERATION OF THIS	VEHICLE AS COMPARED TO	O THE SAME TYPE OF VEHI ROUGHLY THE SAME		INE:
	λ			U MOCH BETTER
i .	LE AS COMPARED TO THE			
☐ MUCH WORSE ☐ SL	IGHTLY WORSE X	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
i	HIS VEHICLE AS COMPARE	D TO THE SAME TYPE OF V	EHICLE FUELED WITH GAS	SOLINE:
☐ MUCH WORSE ☐ SL	IGHTLY WORSE 💢 F	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
OVERALL HANDLING OF	THIS VEHICLE AS COMPAR	ED TO THE SAME TYPE OF	VEHICLE FUELED WITH GA	ASOLINE:
☐ MUCH WORSE ☐ SL	IGHTLY WORSE 💢 F	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
CARGO CAPACITY OF TH	IS VEHICLE AS COMPARED	TO THE SAME TYPE OF VE	HICLE FUELED WITH GAS	OLINE:
M MUCH WORSE ☐ SL				
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR		VEHICLE CHELED WITH C	ACOLINE.
☐ MUCH WORSE ☐ SL			SLIGHTLY BETTER	
OVERALL OPINION OF THE	HIS VEHICLE AS COMPARED			
MUCH WORSE LISE	IGHTLY WORSE (A) F	OUGHLY THE SAME	SLIGHTLY BETTER	MOCH BELLER
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE		AME ENGINE AND FUEL SY NO	STEM7:
	DRIV	ER'S COMMENTS		
(Good or Bad	, we value your impres			ıments.)
,	IK NEEDS			5ED.
OTHERWISE	THE DIFFERE		peration u	
15 MINO	or Here	: IN HI	IT WILL TA	ICE SOME
TIME TO	HAVE LP	6 READILY	AUAILABLE	·
				
NICE TRU	CK. THANK	S EN TI	ית מעמטט פו	N NTW
			18 opportu	1011
TO PAR	TICIPATE.			



onolulu

"Clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawail, Department of Business, Economic Development an Tourism

American Lung Association of Hawa

American Public Works Association

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummine Haweii Diesei Power, Inc. Electric Vehicle Association

Fleet Street Graphics

HT & T Truck Center

Hawaii Electric Vehicle Demonstration

Hawaii Natural Energy Institute

Hewail Transportation Association

Haweilen Electric Co.

Oshu Fleet Safety Organization

Pacific Blodlesel

Pacific Machinery

Pacific Internetional Center for High Technology Research

I Inisyn Biowaste Technology

Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration Fleet Menagement Branch

START DATE	START MILEAGE 5168	END DATE	END MILEAGE 5952	END TIME
18 DEC 98		4104 B		
MAKE Ford	F-250	DRIVER'S NAME & SIGN	ATURE	
		DAN KINDSHI	T7 1	
MODEL YEAR	ENGINE/FUEL	DRIVER'S BUSINESS NA		
1998	5.4L/Bi-Fuel Propane/Gasoline		RANSFER & ST	015
		1127 MIKOL	E ST	
		HONDLVILM	HI 96819	
	DRI	VER'S OPINIONS		
RANGE OF THIS VEHICLE	E AS COMPARED TO THE SA	AME TYPE OF VEHICLE FUI	ELED WITH GASOLINE:	
☐ MUCH WORSE 🏻 SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
		_	IICLE FUELED WITH GASOLI	
☐ MUCH WORSE X SL	.IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
BRAKING OF THIS VEHIC	CLE AS COMPARED TO THE			☐ MUCH BETTER
MANEUVERABILITY OF T			VEHICLE FUELED WITH GAS □ SLIGHTLY BETTER	OLINE: MUCH BETTER
	/		F VEHICLE FUELED WITH GA	
☐ MUCH WORSE ☐ SL		OUGHLY THE SAME		☐ MUCH BETTER
CARGO CAPACITY OF TH	IIS VEHICLE AS COMPARED	TO THE SAME TYPE OF V	EHICLE FUELED WITH GASO	LINE:
☐ MUCH WORSE 🗵 SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
	5		F VEHICLE FUELED WITH GA	
☐ MUCH WORSE ☐ SL	IGHTLY WORSE A	ROUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER
			/EHICLE FUELED WITH GASO ☐ SLIGHTLY BETTER	-
WOOLD YOU CONSIDER		_	AME ENGINE AND FUEL SYS	STEM7:
		'ER'S COMMENT	2	
(Good or Bac			o Please give us your com	ments.)
/ .	very sympoth or	propane hot	1.0	nk in bed
takes up from	nuch space At J	Hus time cost t	, , ,	erale is to
high (10 mes ma	Dropanevs 15.8 mp		1/22 1835) Fina	M Murs
at Waker roun	but is really 1	imited by noor	gearing in Trans	. Very nice
druck a rea		enswhere I wer	41	t could be
MADE GREL ESTE	rient on propane.	I would de finite	de have a man	ne track of
lun Biran	Some an Michaele	Worked (IMI)	1/48/W	VI TIVER OF
VIV				



clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawaii, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Herwall Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummine Hawaii Diesei Power, Inc.

Electric Vehicle Association of Hewaii

Fleet Street Graphics

HT & T Truck Center

Hewaii Detroit Diesel Allison

Hewell Electric Vehicle Demonstration Project

Hewell Netural Energy Institute

Hawaii Transportation Association

Heweilen Electric Co.

Oshu Fleet Safety Organization

Pacific Biodiesel

Pacific Machinery

Pecific International Center for High Technology Research

Unisyn Bloweste Technology

. Department of Energy, Pacific Site Office

U.S. Electrica

U.S. General Services Administration, Fleet Management Brench

START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME
1-5-95	5976	1-11-55	6132	0630
MAKE	MODEL F-250	DRIVER'S NAME & SIGNA	TURE	
Ford	F-250	STEVE PIPER		5
MODEL YEAR	ENGINE/FUEL 5.4L/Bi-Fuel	DRIVER'S BUSINESS NAM		
1998	Propane/Gasoline	PUNAHOU SC		
		1601 PUNAY	18 6d	
		Honolul " b	11 96822	
	DRI	VER'S OPINIONS		
	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUE	LED WITH GASOLINE:	
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
1	VEHICLE AS COMPARED TO			
☐ MUCH WORSE ☑ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER
	LE AS COMPARED TO THE			- MICH PETTER
☐ MUCH WORSE ☐ SL				MUCH BETTER
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE		_	SOLINE:
UVERALL HANDLING OF □ MUCH WORSE □ SL	THIS VEHICLE AS COMPAR		_	SOLINE:
	IIS VEHICLE AS COMPARED			
☐ MUCH WORSE ☑ SL			SLIGHTLY BETTER	MUCH BETTER
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR	ED TO THE SAME TYPE OF	VEHICLE FUELED WITH GA	ASOLINE:
☐ MUCH WORSE ☐ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
OVERALL OPINION OF TH	HIS VEHICLE AS COMPARE	TO THE SAME TYPE OF V	EHICLE FUELED WITH GAS	OLINE:
☐ MUCH WORSE ☑ SL	IGHTLY WORSE	ROUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
WOULD YOU CONSIDER	BUYING A VEHICLE OF THE		AME ENGINE AND FUEL SY	STEM?:
	DRIV	ER'S COMMENTS		
(Good or Bad	l, we value your impres			iments.)
WER-ALL DOWN	peruses of Ud	nde on Ll	15 ESS + Hran	CAS
Uzsitation of	Acelenation	on LP		
Constant UP.	shift - dows	Shiff on hi	lly operation	os LP
Rough Idle	on U			<u> </u>
Bed too Sh	est w trank	La bed		
Set-up would	4 1 .	5 A work	tunat bout a	on those
who I lies "		icles - I do	nt think so	_
Where does	ONE NSTORY	WIDODANZ	? (n Wawh	1



Clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honofulu

State of Hawaii, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Hewaii Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hewail Diesel Power, Inc

Electric Vehicle Association of Hewaii

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Diesel Allison

Herwali Electric Vehicle Demonstration

Hawaii Natural Energy Institute

Heweil Transportation Association

Haweilen Electric Co.

Oshu Fleet Safety Organization

Pacific Biodiesel

Pacific Machinery

Pacific International Center for High Technology Research

Unisyn Bloweste Technology

i. Department of Energy, Pecific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Brench

RECO	RD OF DRIVER'S	COMMENTS F	OR THIS VEHIC				
START DATE	START MILEAGE	END DATE 22 JAN 98	END MILEAGE	END TIME			
MAKE Ford	MODEL F-250	BRIAN LAU	Star X	Lan			
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	P. (First Hawaiian Lead	sing, Inc.			
	DRI	L VER'S	Vice President	ļ			
1_	RANGE OF THIS VEHICLE AS COMPARED TO THE SAME TYPI MUCH WORSE SLIGHTLY WORSE ROUGHLY 1314 S. King St., 2nd Floor P. O. Box 1240, Honolulu, HI 96807 Telephone (808) 593-5325 Facsimile (808) 593-5302						
☐ MUCH WORSE ☐ SLI			SLIGHTLY BETTER	☐ MUCH BETTER			
BRAKING OF THIS VEHICE	LÈ AS COMPARED TO THE S		UELED WITH GASOLINE: SLIGHTLY BETTER	☐ MUCH BETTER			
MANEUVERABILITY OF THE MUCH WORSE SLI	HIS VEHICLE AS COMPARE GHTLY WORSE		VEHICLE FUELED WITH GAS	SOLINE:			
OVERALL HANDLING OF	THIS VEHICLE AS COMPAR GHTLY WORSE		VEHICLE FUELED WITH GA SLIGHTLY BETTER	ASOLINE: MUCH BETTER			
CARGO CAPACITY OF TH	IS VEHICLE AS COMPARED	_	EHICLE FUELED WITH GAS	OLINE:			
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR	-	VEHICLE FUELED WITH GA	ASOLINE:			
OVERALL OPINION OF TH	IIS VEHICLE AS COMPARED		YEHICLE FUELED WITH GAS	OLINE: MUCH BETTER			
WOULD YOU CONSIDER I	BUYING A VEHICLE OF THE		AME ENGINE AND FUEL SY	STEM?:			
DRIVER'S COMMENTS (Good or Bad, we value your impression of this vehicle. Please give us your comments.)							
Overall performance with propane is acceptable. I did not have the opportunity to push it,							
i.e. accelerate from zero to 60 on an open highway. The acceleration using propane was							
slightly less efficie	slightly less efficient on a cold engine than using gasoline. However, with a warm engine, I						
did not detect any difference. My driving was 80% city and 20% highway, and noticed worse mileage per gallon with the propane. I used 0.75 of the propane tank and logged 203.1							
miles After 100 n	miles. After 100 miles on gasoline, my gauge indicated I used roughly 0.25 of a full tank. I						
would suggest a sr	would suggest a small gasoline tank as a reserve, so the propane tank in the bed of the demo						
vehicle could be si	zed down or incorpor	rated elsewhere. Tal	ring up bed space wo	uld not			
appeal to any truck	cuser, unless you rais	ed the entire bed. C	ruising and passing v	vere			

identical using either fuel. The manufacturers together with any taxing authorities should partner in creating incentives for propane dispensing firms at the wholesale and retail level.



onolulu

clean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawaii, Department of Business, Economic Development and Tourism

American Lung Association of Hawaii

American Public Works Association -Hewell Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Ges Company

Cummins Haweii Diesei Power, Inc.

Electric Vehicle Association of Haweil

Fleet Street Graphics

HT & T Truck Center

Heweii Detroit Diesel Allison

Hawaii Electric Vehicle Demonstration Project

Hawaii Natural Energy Institute

Hawaii Transportation Association

Hawaiian Electric Co.

Onhu Fleet Safety Organization

Pacific Biodlesei

Pacific Machinery

Pecific International Center for High Technology Research

Unisyn Bloweste Technology

3. Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Branch

	START MILEAGE	END DATE	END MILEAGE	END TIME		
Ford Ford	MODEL F-250	1	ME & SIGNATURE	2//		
	1-250	ISPLAN	MISHIDA Z	777		
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S	tel Monte			
WARRIED AND THE STATE OF THE ST	DI	RIVER'S C	Vice Pi	. NISHIDA resident Manager		
RANGE OF THIS VEHICLE		SAME TYPE O	Del Monte Fresh Produce (Hawaii) Inc. P.O. Box 200 Kunia, Hawaii 96759	Tel (808) 621-122 Fax (808) 621-121		
ACCELERATION OF THIS		TO THE SAME		R MUCH BETTER		
BRAKING OF THIS VEHIC		IE SAME TYPE OF ROUGHLY THE S	VEHICLE FUELED WITH GASO			
MANEUVERABILITY OF T		RED TO THE SAM	ETYPE OF VEHICLE FUELED W AME SLIGHTLY BETTE			
OVERALL HANDLING OF		ARED TO THE SAME TO THE S	ME TYPE OF VEHICLE FUELED AME SLIGHTLY BETTE	-		
CARGO CAPACITY OF TH		ED TO THE SAME	TYPE OF VEHICLE FUELED WI	A1-17-19		
EASE OF OPERATION OF MUCH WORSE SL		ARED TO THE SAME ROUGHLY THE S	ME TYPE OF VEHICLE FUELED AME SLIGHTLY BETTE	_		
OVERALL OPINION OF THE			TYPE OF VEHICLE FUELED W			
WOULD YOU CONSIDER		HE SAME MAKE V	/ITH THE SAME ENGINE AND	FUEL SYSTEM?:		
(Good or Bad		IVER'S CON	MENTS rehicle. Please give us yo	our comments.)		
Iwas plea	11 -	mised .	it the go	od personen		
Engine Size F graving provided satisfactory ower						
position reduced compospace. Auto sint-of valve						
108, tia 14				10 T- 10 1/		
Leature me Leeder valve	- was inc	envenier	+. Overall	very		



Clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawaii, Department of Business, Economic Development ar Tourism

American Lung Association of Hawa

American Public Works Association

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hawaii Diesel Power, Inc.

Electric Vehicle Association of Haweii

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Diesel Allison

Hawaii Electric Vehicle Demonstration Project

Hawaii Natural Energy Institute

weil Trensportation Association

Haweilan Electric Co.

Oshu Fleet Safety Organization

Pacific Biodissel

Pacific Mechinery

Pacific International Center for High Technology Research

Unisyn Blowsete Technology

5. Department of Energy, Pacific Site Office

U.S. Electricer

U.S. General Services Administration Fleet Management Branch

	T			
START DATE 22 forsag	START MILEAGE	END DATE	END MILEAGE	END TIME
granday.	1700	22 MM299	19218	
MAKE	MODEL	DRIVER'S NAME & SIGNA	ATURE	
Ford	F-250	Maaler Keaunn	a Ruseic	Keaunui
MODEL YEAR	ENGINE/FUEL	DRIVER'S BUSINESS NAI		
1998	5.4L/Bi-Fuel	110		
	Propane/Gasoline	41 249 106	itupanoka Ch	rect
		Warmaralo	All avere	
		726(77)	7 74775	
	DRI	VER'S OPINIONS		
RANGE OF THIS VEHICLE	AS COMPARED TO THE SA	ME TYPE OF VEHICLE FUE	LED WITH GASOLINE:	
☐ MUCH WORSE ☐ SLI	IGHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
ACCELERATION OF THIS	VEHICLE AS COMPARED TO	THE SAME TYPE OF VEHI	CLE FUELED WITH GASOLI	NE:
☐ MUCH WORSE ☑ SLI	IGHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
BRAKING OF THIS VEHIC	LE AS COMPARED TO THE	SAME TYPE OF VEHICLE FL	JELED WITH GASOLINE:	
☐ MUCH WORSE ☐ SLI	GHTLY WORSE A	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
MANEUVERABILITY OF T	HIS VEHICLE AS COMPARE		EHICLE FUELED WITH GAS	OLINE:
☐ MUCH WORSE ☐ SLI	IGHTLY WORSE G	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
	THIS VEHICLE AS COMPAR			SOLINE:
☐ MUCH WORSE ☐ SLI	GHTLY WORSE 🗹 R	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
1	IS VEHICLE AS COMPARED			
☐ MUCH WORSE ☐ SLI	IGHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER
	THIS VEHICLE AS COMPAR			
☐ MUCH WORSE ☐ SLI	GHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
	IIS VEHICLE AS COMPARED			
☐ MUCH WORSE ☐ SLI	GHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER
WOULD YOU CONSIDER !	BUYING A VEHICLE OF THE S		AME ENGINE AND FUEL SY:	STEM7:
(Good or Bad	DKIV we value your impres ,	ER'S COMMENTS		ments)
	· · · · · · · · · · · · · · · · · · ·			V20 0 2 0 - 20
Office Tust	tation when a to propane to	acceleration.	Corrote sty ea) Space
	e 10 propane 10	ere. Over all	+ Pertor produce	was
great!				
<u> </u>			······································	
	Unisyn	Waimanalo, Hawaii		
	NAALEI KEA	UNUI	entered to the second s	
	INAMELIKEA	.0, .01	**************************************	



Jean Fuels for Clean Air"

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor

Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito

The Gas Company

Stakeholders:

City and County of Honolulu

State of Hewell, Department of Business, Economic Development and Tourism

American Lung Association of Hawa

American Public Works Association -Hawell Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hewali Diesel Power, Inc.

Electric Vehicle Association of Hawaii

Fleet Street Graphics

HT & T Truck Center

Hewaii Detroit Diesel Allison

Hewail Electric Vehicle Demonstration Project

Hewaii Naturei Energy Institute

Hewaii Transportation Association

Haweilan Electric Co.

Oahu Fleet Salety Organization

Pacific Blodiesel

Pacific Machinery

Pacific international Center for High Technology Research

Unisyn Bloweste Technology

). Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Branch

RECORD	OF DRIVER'S	COMMENTS	FOR	THIS	VEHICI	C
neconv	UFUNIVENS	O COMMENS OF STREET	run	11110	W LITTLE	Œ

	START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME			
	5 Apr 99	1441	18 May 99	1081				
	MAKE	MODEL DRIVER'S NAME & SIGNATURE						
	Ford	F-250	Bon Post					
	MODEL YEAR	ENGINE/FUEL	DRIVER'S BUSINESS NAM					
	1998	5.4L/Bi-Fuel Propane/Gasoline	E NOA CO	AP SL				
			1141 Walk	uanu ot				
			Hon H: 90	,814				
		DRI	VER'S OPINIONS					
		AS COMPARED TO THE SA	-	LED WITH GASOLINE:				
	☐ MUCH WORSE ☐ SLI	GHTLY WORSE ØR	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER			
- 1		VEHICLE AS COMPARED TO	· · · · · · · · · · · · · · · · · · ·		NE:			
	☐ MUCH WORSE ☐ SLI	GHTLY WORSE ZR	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER			
		LE AS COMPARED TO THE						
	☐ MUCH WORSE ☐ SLI	GHTLY WORSE ZR	OUGHLY THE SAME	SLIGHTLY BETTER	☐ MUCH BETTER			
		HIS VEHICLE AS COMPAREI						
L	☐ MUCH WORSE ☐ SLI	GHTLY WORSE	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER			
	_	THIS VEHICLE AS COMPARI	•					
-	☐ MUCH WORSE ☐ SLI	GHTLY WORSE R	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER			
		S VEHICLE AS COMPARED						
-	☐ MUCH WORSE Ø SLI				MUCH BETTER			
	EASE OF OPERATION OF THE MUCH WORSE SUPERIOR SUP	THIS VEHICLE AS COMPAR						
\vdash					MUCH BETTER			
t	OVERALL OPINION OF TH \square MUCH WORSE $\ \square$ SLI	IS VEHICLE AS COMPARED						
\vdash					MUCH BETTER			
	WOULD YOU CONSIDER E	BUYING A VEHICLE OF THE		ME ENGINE AND FUEL SYS	STEM?:			
	•	DRIV	ER'S COMMENTS					
L	(Good or Bad,	we value your impres			ments.)			
\lceil	Enimed	Drivin thi	truel.	Carno area	two			
Γ	Small la	1 our sout	Capl od		Letto.			
	A Lili	- · · · · · · · · · ·		y-Typun o				
-	T. T.	, // 0	~40 · - ·	A A S.				
-	- Many	Jan for ~	my les tree	se xruen a	rst.			
\vdash	parleup	iato,						
F	V							
L								
L								



Clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii Diesel Power, Inc.

Secretary

Jack Bowman U.S. Electricar

Treasurer

Brad Saito
The Gas Company

Stakeholders:

City and County of Honolulu

State of Hawell, Department of Business, Economic Development and Tourism

American Lung Association of Hewaii

American Public Works Association -Hawaii Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Hawaii Diesel Power, Inc.

Electric Vehicle Association of Hawaii

Fleet Street Graphics

HT & T Truck Center

Hawaii Detroit Dissel Allison

Hawaii Electric Vehicle Demonstration Project

Howali Natural Energy Institute

Hawaii Transportation Association

Hewelian Electric Co.

Oshu Fleet Safety Organization

Pacific Biodiesei

Pacific Mechinery

Peoillo international Center for High Technology Research

Unisyn Bioweste Technology

3. Department of Energy, Pacific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Branch

START DATE 12 July 99	START MILEAGE	END DATE # -11-99	END MILEAGE	END TIME 1.00 Box			
MAKE Ford	F-250	DRIVER'S NAME & SIGNA	TURE				
MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAME AND ADDRESS ERIC ENJOSA HTIT CO. INC.					
	DRI	VER'S OPINIONS					
	RANGE OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE ROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER						
ACCELERATION OF THIS	VEHICLE AS COMPARED TO GHTLY WORSE	_	CLE FUELED WITH GASOL SLIGHTLY BETTER	INE:			
BRAKING OF THIS VEHICE	LE AS COMPARED TO THE S		JELED WITH GASOLINE:] SLIGHTLY BETTER	☐ MUCH BETTER			
MANEUVERABILITY OF TO	HIS VEHICLE AS COMPARE GHTLY WORSE		/EHICLE FUELED WITH GA: SLIGHTLY BETTER	SOLINE: MUCH BETTER			
OVERALL HANDLING OF	THIS VEHICLE AS COMPAR GHTLY WORSE		VEHICLE FUELED WITH GA SLIGHTLY BETTER	ASOLINE:			
CARGO CAPACITY OF TH	IS VEHICLE AS COMPARED GHTLY WORSE		EHICLE FUELED WITH GAS	OLINE: MUCH BETTER			
EASE OF OPERATION OF	THIS VEHICLE AS COMPAR GHTLY WORSE	_	VEHICLE FUELED WITH G	ASOLINE:			
OVERALL OPINION OF TH	IIS VEHICLE AS COMPARED GHTLY WORSE		EHICLE FUELED WITH GAS SLIGHTLY BETTER	OLINE:			
WOULD YOU CONSIDER I	BUYING A VEHICLE OF THE S		AME ENGINE AND FUEL SY	/STEM7:			
(Good or Bad	DRIV , we value your impres	ER'S COMMENTS sion of this vehicle. P		nments.)			
ADJUSTMENTON	TING RECEIVED		1016 POSITION	1. Dossible			
I NOTICED 1	Took Longe	n To 5 7427	THE VEHICA	4E			
OMENE CON	Quelle lite propose Companies to lite 8/15, ESDECIALLY						
AND NO ON	AND NO DIFFERENCES BETWEEN THE (2) DIFFERENT TYPES						
OF FLEET WENT	OF FUEL WERE NOTED. I ESPECIALLY LIKE THE DOWN RANGE						
OF MILES BET	OF MILES BETWEEN FILL UPS! (EXCELLENT TRUCK.)						



Clean Fuels for Clean Air*

160 Ahui Street Honolulu, Hawaii 96813-5510

Telephone: (808)523-4171

Facsimile: (808)538-7899

Officers:

President

Ross Sasamura, P.E. City & County of Honolulu Department of Public Works

Vice-President

Lloyd Ennor Cummins Hawaii

Diesel Power, Inc.

Secretary

Jack Bowman

U.S. Electricar

Treasurer

Brad Saito
The Ges Company

Stakeholders:

State of Hawaii, Department of Business, Economic Development or Tourism

American Lung Association of Hawaii

American Public Works Association Hawaii Chapter

Ameron HC & D

Brewer Environmental Ind. LLC

The Gas Company

Cummins Haweil Diesel Power, Inc.

Electric Vahicle Association of Hewell

Fleet Street Graphics

HT 5 T Truck Center
Howali Detroit Diesel Allison

Hawaii Electric Vehicle Demonstration

Hawaii Natural Energy Institute

Hawaii Transportation Association

Hawailan Electric Co.

Oahu Fleet Safety Organization

Pacific Blodlesei

Pacific Machinery

Pecific International Center for High Technology Research

Unisyn Bloweste Technology

Department of Energy, Pecific Site Office

U.S. Electricar

U.S. General Services Administration, Fleet Management Branch

	START DATE	START MILEAGE	END DATE	END MILEAGE	END TIME	
	11 Ava 99	12348	9-6-99	1,024	12:00	
	MAKE Ford	F-250	DRIVER'S NAME & SIGNATURE			
			JRSSS HARSON			
	MODEL YEAR 1998	ENGINE/FUEL 5.4L/Bi-Fuel Propane/Gasoline	DRIVER'S BUSINESS NAM	IE AND ADDRESS	808	
			DRIVER'S BUSINESS NAME AND ADDRESS Scholer Homes inc \$28 Food St. Mall 4th. 521.5661 Home Hi Gu767.			
		·	328 Fort 5	a. 161		
			Hone w	90771		
	DRIVER'S OPINIONS					
	RANGE OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:					
	☐ MUCH WORSE ☐ SLI	GHTLY WORSE THE	OUGHLY THE SAME	SLIGHTLY BETTER	MUCH BETTER	
	ACCELERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:					
	☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER					
	BRAKING OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: ☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTE				☐ MUCH BETTER	
	MANEUVERABILITY OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE MOUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER					
	OVERALL HANDLING OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:					
	☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER					
	CARGO CAPACITY OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:					
	☐ MUCH WORSE ☑ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER					
	EASE OF OPERATION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE:					
	☐ MUCH WORSE ☐ SLIGHTLY WORSE ☐ ROUGHLY THE SAME ☐ SLIGHTLY BETTER ☐ MUCH BETTER					
	OVERALL OPINION OF THIS VEHICLE AS COMPARED TO THE SAME TYPE OF VEHICLE FUELED WITH GASOLINE: MUCH WORSE SLIGHTLY WORSE PROUGHLY THE SAME SLIGHTLY BETTER MUCH BETTER					
	WOULD YOU CONSIDER BUYING A VEHICLE OF THE SAME MAKE WITH THE SAME ENGINE AND FUEL SYSTEM?:					
	YES ON					
	DRIVER'S COMMENTS					
	(Good or Bad, we value your impression of this vehicle. Please give us your comments.)					
	I ready Enjoyed THE tout 24 being triently to					
	THE Enviorment with the fiel choice. THE programme had					
	I really Enjoyed the fact 24 being friendly to THE Environment with the first choice. THE program had A historian at starting off. wor all their proformal well. The best part if my Expense was THE PR" To raise THE Acome has of TAKING PARE of our Planet. Themes.					
	proformal well. THE best part it my Expense					
	WAS THE PR" TO MUSE THE AUTHORISS OF					
	TAKING PATE of our Planet. Telorites!					